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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,682	03/29/2005	Hanns-Ingo Maack	DE 020218	1726

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EXAMINER

PATEL, JAYESH A

ART UNIT	PAPER NUMBER
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2624

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/529,682	Applicant(s) MAACK, HANNS-INGO	
	Examiner JAYESH A. PATEL	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

The arguments /remarks dated June 19 2008 have been considered. The applicant argues on page 6 that there is no teaching or suggestion in Chan of a maximum processing rate, the examiner disagrees. Chen discloses the maximum rate concept at Col 38 lines 30-32 where **“The maximum rate limitation that cannot be overcome is dictated by the pixel read out times”** shows that there is a maximum rate inherently present and it cannot be overcome which refers to Gmax. However the **specific value of Gmax is not recited** in the claim therefore this would meet the claim1 limitation of maximum rate. Applicant further argues on page 6 and 7 that Chan does not disclose **“combining the two options of subarray and binning”**, the examiner disagrees. The above limitation of combining the sub-array and binning is not recited in the body of the claim. The limitations in claim 1 are explained as follows.

Chen discloses **“sub-array read out”** and **pixel reading out times** at **(Col 36 lines 59-67, Col 37 lines 1,2 and 6, Col 38 lines 30-31)** which is the function of the **“evaluation unit”** as claimed.

Parameter **(1024X1024 pixel CCD of width and height at Col 37 lines 3)**, remaining parameters **(Col 37 lines 35-36)** and Binning which is a combination or grouping of the pixels by a factor of **“binned by (4X4)”at (Col 37 line 12)**.

“Imaging rate f” which is the frequency at which the pixels can be read
(Col 37 lines 4-5).

“Maximum rate Gmax” of the evaluation unit is not exceeded at **(Col 37 lines 8-12** where the CCD operates at reduced resolution (less pixels) than the pixels in the CCD and **Col 38 Lines 27-35** where Chan discloses the **maximum rate** that **cannot be overcome (exceeded) is dictated** (defined) or judged by the read out times and as such the number of pixels). Chan further discloses at **(Col 38 lines 27-33)** that the CCD operating at 1MHZ can acquire **400 frames/seconds** and the for a CCD the slowest read out times are **500 frames per seconds**, thus the **readout rate (400) does not exceed the (500) rate** which is the slowest and the maximum (more) than 400.

Regarding Claim 9 see the arguments with respect to claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4, 5 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Chan (US 6355420) hereafter Chan.

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1. Regarding Claim 1, Chan discloses a method (**Col 36 Lines 40- through Col 37 Lines 17**) of operating an imaging device (**CCD cameras**) with a two-dimensional field of image sensors (**Col 36 Lines 45-47**) as well as an evaluation unit (**Col 36 lines 61 and Col 37 lines 2 the read out**) which is capable of reading out and processing the pixel signals, representing output signals of image sensors combined by a binning operation (**Col 36 Lines 62-63 where the binning takes place to modify the pixels**), at a maximum rate (**higher frame rate of 16 times the frame rate of 100 frames /second at Col 37 Lines 4-9**) of no more than $G_{sub,max}$ (**16 times the rate at Col 37 Lines 14**), in which method at least one parameter is preset in order to define a sub-region of the field (**100X100 in a 1024X1024 pixel CCD detector at Col 37 Line 3**), any remaining parameters for defining the sub-region as well as a binning factor b (**Binned 4X4 region at Col 37 Lines 12**) and an imaging rate f (**pixel read frequency 1MHZ at Col 37 Lines 4-5**) are defined in such a manner that the maximum rate $G_{sub,max}$ of the evaluation unit is not exceeded during the reading out of all pixel signals from the sub-region as seen in (**Col 36 Lines 40- through Col 37 Lines 17 and Col 38 lines 27-35 where the maximum rate that cannot be overcome (exceeded) is dictated** (defined) or judged by the read out times and as such the number of pixels). The detailed explanation of the limitations is as explained above in the response to arguments.

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2. Regarding Claim 4, Chan disclose the method as claimed in claim 1. Chan further disclose the device characterized in that the sub-region is preset **(4X4 subregion at Col 37 Lines 12)** in the service mode of the imaging device.

3. Regarding Claim 5, Chan discloses the method as claimed in claim 1. Chan further disclose characterized in that there are specified rules in conformity with which variables are changed relative to their current values in order to ensure that the maximum rate G.sub.max is adhered to at **(Col 37 Lines 1-17)**. Chan disclose that smaller desired regions allow for higher frame rates. Chan further disclose that for instance 100X100 pixel in a 1024X1024 pixel CCD may be read at a frame rate of 100 frames/sec at a pixel read frequency of 1 MHZ. A 1024X1024 pixel CCD binned 4X4 yields a 256X256 image which has large pixels that are effectively 16 times larger than the unbinned version and the image is read out at 16 times the rate. Chan further disclose that the operational mode of the CCD is dictated **(setting the rules for the binning and the frame rate)** by the components of the camera and the computer.

4. Claim 9 is a corresponding Imaging device claim of Claim 1. See the explanation of Claim 1.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2,3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan in view of Hoffman et al. (EP 1089555A1) hereafter Hoffman.

5. Regarding Claim 2, Chan discloses the method as claimed in claim 1. Chan discloses two-dimensional arrangements of the pixels in **(Col 36 Lines 40- through Col 37 Lines 17)**. Chan is silent and however does not disclose characterized in that the image sensors are arranged in a periodic pattern in a rectangular field, the sub-region having a rectangular shape with its sides extending parallel to the edges of the field.

Hoffman disclose characterized in that the image sensors are arranged in a periodic pattern in a rectangular field **(Fig 3 periodic pattern of region 104 in region 102)**, the sub-region having a rectangular shape with its sides extending parallel to the edges of the field **(detector array 100 is divided in to sub regions in which the blocking pattern looks like the sides or (boundaries) of the blocks are parallel to both the edges of detector 100)**. Hoffman disclose that the present invention recognizes the segmenting (binning) the detector array in to the regions provides a versatile and more useful system at

(Col 2 Lines 53-57). Hoffman further discloses that the detector can be programmed to enable different scan rates in each region to enable different resolutions in each region and to reduce the production of unnecessary data at **(Col 2 lines 22-25)**. Chan also disclose the method of processing the pixels in which the advantage of defining the regions of interest is that it allows faster image read out to occur at **(Col 36 Lines 65-66)**. Hoffman and Chan are from the same field of endeavor and are analogous in the field of image processing , therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the teachings of Hoffman in the method of Chan for the above reasons.

6. Regarding Claim 3, Chan disclose the method as claimed in claim 1. Chan discloses the imaging device useful for detecting signals in a two dimensional fluorescence imaging system which detects electromagnetic radiation in the fluorescent wavelength range at **(Col 36 Lines 4-7)** however is silent and does not disclose X-ray detector. Hoffman further disclose characterized in that the image sensors are X-ray sensors at **(Fig 3 and at Col 2 Lines 57-58)**.

7. Regarding Claim 10, Chan discloses an imaging device as claimed in claim 9. Chan is silent and however does not disclose characterized in that it comprises an X-ray apparatus with an adjustable diaphragm arrangement in the beam path,

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at least one adjustment parameter of the diaphragm device being presettable while any remaining adjustment parameters are automatically set.

Hoffman disclose an X-ray apparatus as in Fig 4 and the detector in fig 3.

Claims 6 -8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan in view of Wischmann et al (US 6854885) hereafter Wischmann.

8. Regarding Claim 6, Chan disclose the method as claimed in claim 1. Chan discloses that the CCD array is evaluated in smaller sub regions for higher frame rates at **(Col 37 Line 1)**. Chan is silent and however does not disclose characterized in that the evaluation of the pixel signals is performed by means of calibration images related to the sub-region.

Wischmann disclose characterized in that the evaluation of the pixel signals is performed by means of calibration images related to the sub-region at **(Col 1 Lines 44- 49 and Col 4 Lines 1-36)**. Wischmann disclose that the processing unit (with calibration measurements) removes differences between the channels and thus higher degree of corrected images can be obtained at **(Col 4 Lines 20-29)**. Wischmann and Chan are from the same field of endeavour (image processing) therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the teachings of Weischmann in the CCD image processor of the Chan for the above reasons.

9. Regarding Claim 7, See the explanation of Claim 6. Wischmann further disclose where the calibration images are generated for the X-ray detector in order to generate a corrected image and also at **(Col 2 Lines 49-57)**.

10. Regarding Claim 8, Chan and Wischmann disclose the method as claimed in claim 6. Wischmann further disclose characterized in that dark images of the sub-region are generated and used as calibration images at **(Col 1 Lines 44-46)**. Wischmann also disclose the zero radiation image for each sensor **(dark image from each sensor)** at Col 2 Lines 49-50.

Other Cited prior art

The other cited prior art made of record but not relied on are (US 20030193589), (US 6921200), (US 5523786), (US 7257278) and (US 20020014606).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAYESH A. PATEL whose telephone number is (571)270-1227. The examiner can normally be reached on M-F 7.00am to 4.30 pm (5-4-9). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

10/09/2008

/Jayesh A Patel/
Examiner, Art Unit 2624

/Jingge Wu/

Supervisory Patent Examiner, Art Unit 2624